WHAT IS CLAIMED IS:

1. A fission yeast strain comprising non-functional *dga1* and *plh1* genes.

2. The yeast strain of claim 1 that is a *Schizosaccharomyces pombe* Δ*dga1* Δ*plh1* double deletion mutant.

3. The yeast strain of claim 1 or claim 2 comprising an exogenous gene that, when expressed in the *Schizosaccharomyces* yeast strain, results in TAG synthesis.

4. The yeast strain of claim 3 wherein the exogenous gene is a diacylglycerol acyl-transferase gene.

5. The yeast strain of claim 4 wherein the diacylglycerol acyl-transferase gene is a human diacylglycerol acyl-transferase gene.

6. A method for screening or identifying a compound that inhibits or prevents TAG synthesis, comprising:

treating with a compound a culture of a fission yeast strain comprising non-functional *dga1* and *plh1* genes, wherein the yeast strain comprises an exogenous gene which is expressible in the yeast strain and which, when expressed in the yeast strain, results in TAG synthesis; and detecting any TAG synthesis in the culture.

7. The method of claim 6 wherein the yeast strain is a *Schizosaccharomyces pombe* Δ*dga1* Δ*plh1* double deletion mutant.

8. The method of claim 6 or claim 7 wherein the exogenous gene is a diacylglycerol acyl-transferase gene.

9. The method of claim 8 wherein the diacylglycerol acyl-transferase gene is a human diacylglycerol acyl-transferase gene.

10. The method of any one of claims 6 to 9 wherein the compound is a small molecule, a protein, a peptide, an antibody, a hormone, a lipid or a nucleic acid.

11. The method of any one of claims 6 to 10 wherein the compound is useful for treatment of obesity, diabetes, coronary heart disease, heart failure or cardiomyopathy.

12. The method of any one of claims 6 to 11 wherein the detecting comprises adding labeled substrate of TAG synthesis to the culture.

13. The method of claim 12 wherein the substrate is labeled with a radioactive molecule, a chemiluminescent molecule, a fluorescent molecule, an enzyme that cleaves a reagent to produce a coloured molecule, a coloured molecule or a heavy metal complex.

14. The method of claim 12 or claim 13 wherein the labeled substrate is a fatty acid.

15. The method of claim 14 wherein the fatty acid is oleic acid or palmitic acid.

16. The method of any one of claims 12 to 15 wherein the detecting comprises extraction of cellular lipids and separation of the cellular lipids by thin layer chromatography.

17. The method of any one of claims 6 to 11 wherein the detecting comprises exposing the culture to conditions that are suitable for inducing lipoapoptosis in a culture not expressing the exogenous gene and detecting lipoapoptosis in the exposed culture.

18. The method of claim 17 wherein the exposing comprises addition of fatty acid or diacylglycerol to the culture or to nutrient starvation.

19. The method of claim 18 wherein the fatty acid or diacylglycerol is added to a liquid culture during log phase.

20. The method of claim 17 or claim 18 wherein the fatty acid is oleic acid or palmitic acid and the diacylglycerol is diC8 diacylglycerol.

21. The method of claim 20 wherein the palmitic acid is added at a concentration of about 1 mM.

22. The method of claim 18 wherein the nutrient starvation comprises culturing the culture in water or low-glucose medium.

23. The method of any one of claims 17 to 22 wherein the detecting lipoapoptosis comprises measuring cell viability.

24. The method of any one of claims 17 to 23 wherein the detecting lipoapoptosis comprises detecting an apoptotic marker.

25. The method of claim 24 wherein the apoptotic marker is fragmented nuclear DNA, exposed phosphatidyl serine at the outer leaflet of the plasma membrane or production of reactive oxygen species.

26. The method of claim 24 or 25 wherein the detecting lipoapoptosis comprises adding a detection molecule.

27. The method of claim 26 wherein the detection molecule is a radioactive molecule, a chemiluminescent molecule, a fluorescent molecule, an enzyme that cleaves a reagent to produce a coloured molecule, a coloured molecule or a heavy metal complex.

28. A method of screening or identifying a compound that inhibits or prevents lipotoxicity, comprising:

treating with a compound a culture of a fission yeast strain comprising non-functional *dga1* and *plh1* genes;

exposing the treated culture to conditions that are suitable for inducing lipotoxicity in an untreated culture; and

detecting lipotoxicity in the treated culture.

29. The method of claim 28 wherein lipotoxicity is lipoapoptosis.

30. The method of claim 28 or claim 29 wherein the yeast strain is a *Schizosaccharomyces pombe Δdga1 Δplh1* double deletion mutant.

31. The method of any one of claims 28 to 30 wherein the compound is a small molecule, a protein, a peptide, an antibody, a hormone, a lipid or a nucleic acid.

32. The method of any one of claims 28 to 31 wherein the compound is useful for treatment of obesity, diabetes, coronary heart disease, heart failure or cardiomyopathy.

33. The method of any one of claims 28 to 32 wherein the exposing the treated culture comprises addition of fatty acid or diacylglycerol to the culture or nutrient starvation.

34. The method of claim 33 wherein the fatty acid or diacylglycerol is added to a liquid culture during log phase.

35. The method of claim 33 or claim 34 wherein the fatty acid is oleic acid or palmitic acid and the diacylglycerol is diC8 diacylglycerol.

36. The method of claim 35 wherein the palmitic acid is added to a concentration of about 1 mM.

37. The method of claim 36 wherein the nutrient starvation comprises culturing the treated culture in water or low-glucose medium.

38. The method of any one of claims 29 to 37 wherein the detecting comprises detecting an apoptotic marker.

39. The method of claim 38 wherein the apoptotic marker is fragmented nuclear DNA, exposed phosphatidyl serine at the outer leaflet of the plasma membrane or production of reactive oxygen species.

40. The method of claim 38 or 39 wherein the detecting lipoapoptosis comprises adding a detection molecule.

41. The method of claim 40 wherein the detection molecule is a radioactive molecule, a chemiluminescent molecule, a fluorescent molecule, an enzyme that cleaves a reagent to produce a coloured molecule, a coloured molecule or a heavy metal complex.

42. The method of any one of claims 29 to 37 wherein the detecting comprises measuring cell viability.

43. The method of claim 42 wherein measuring cell viability comprises performing a colony forming assay.

44. A method of making a fission yeast strain comprising non-functional *dga1* and *plh1* genes, comprising functionally interrupting the *dga1* and *plh1* genes in a fission yeast strain.

45. A method of screening or identifying a gene that complements non-functional *dga1* and *plh1* genes, comprising transforming a fission yeast strain comprising non-functional *dga1* and *plh1* genes with an exogenous gene; culturing the transformed yeast strain; and detecting any TAG synthesis in the culture.

46. A kit or commercial package comprising a fission yeast strain comprising non-functional *dga1* and *plh1* genes and instructions for screening or identifying a compound that inhibits or prevents TAG synthesis.

47. A kit or commercial package comprising a fission yeast strain comprising non-functional *dga1* and *plh1* genes and instructions for screening or identifying a compound that inhibits or prevents lipotoxicity.

48. A kit or commercial package comprising a fission yeast strain comprising non-functional *dga1* and *plh1* genes and instructions for screening or identifying a gene that complements the *dga1* and *plh1* genes.